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AMSAT NEWS SERVICE
ANS-012

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

You can sign up for free e-mail delivery of the AMSAT News Service Bulletins via the ANS List; to join this list see:
http://www.amsat.org/mailman/listinfo/ans

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ANS-012 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 012.01
 From AMSAT HQ KENSINGTON, MD.
DATE January 12, 2020
To All RADIO AMATEURS
BID: $ANS-012.01

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Virgin Orbit Plans Flight Test of LauncherOne Rocket in February

Virgin Orbit, AMSAT's launch for RadFxSat-2/Fox-1E, has announced they expect to have their first test launch of LauncherOne, their airborne-launched rocket, sometime in the second half of February. The LauncherOne rocket is carried on the VO 747 Cosmic Girl aircraft.

If this first test flight is successful RadFxSat-2/Fox-1E is planned for launch on the second flight of LauncherOne during 1Q 2020 on the ELaNa XX mission.

RadFxSat-2/Fox-1E

Uplink: 145.860 MHz - 145.890 MHz LSB/CW
Downlink: 435.790 MHz - 435.760 MHz USB/CW (inverting)
Telemetry: 435.750 MHz 1K2 bps BPSK

Investigate the excitement at: https://virginorbit.com/ - and - https://twitter.com/Virgin_Orbit/status/1214605925228482560

[ANS thanks Virgin Orbit for the above information]

AMSAT Awards Update

Bruce Paige, KK5DO, AMSAT Director Contests and Awards, reported, "Now that 2019 is behind us, I thought I would catch up with the awards issued the last half of the year."

AMSAT Satellite Communicators Award for making their first satellite QSO

+ Daniel Rahn, K8EC
+ Bernd Peters, KB7AK
+ Shane Hale, KE5HSS
+ Benny Chandra, YD0SPU
+ Martin Lipert, OK1UM
+ Helene Charbonneau, VE2AQM
+ Spiro Andy Loizos, VE2LZS
+ Stelios Alex Loizos, VA2LZS
+ Souly Loizos, VE2FFS
+ Adam Warrix, KD9NRT
+ Steffen Gross, DM3CW

AMSAT Communications Achievement Award

+ Jonathan Zylstra, KL2DN #620
+ Robert Bankston, KE4AL #621
+ Sloan Davis, KN4GQB #622
+ Walter Mercado Vazquez, KP4T #623

AMSAT Sexagesimal Satellite Communications Achievement Award

+ Robert Bankston, KE4AL #184

AMSAT Century Club Award

+ Robert Bankston, KE4AL #54

AMSAT South Africa Satellite Communications Achievement Award

+ Jonathan Zylstra, KL2DN #US222
+ Robert Bankston, KE4AL #US223
+ Sloan Davis, KN4GQB #US224

AMSAT Robert W. Barbee Jr., W4AMI Award (1,000-4,000)

+ Ron Parsons, W5RKN upgrade to 4000

AMSAT Robert W. Barbee Jr., W4AMI Award 5,000

+ Adrian Liggins, VA3NNA #35
+ Ron Parsons, W5RKN #36

AMSAT Rover Award

+ #043 N7EGY
+ #044 CU2ZG
+ #045 K9EI
+ #046 KR5Z
+ #047 N4DCW
+ #048 KC9VGG
+ #049 W3ZM/9 (OP KC9VGG)
+ #050 W5PFG

The next batch of AMSAT 50th Anniversary Satellite Friends of 50 awards are hot off the presses. Congratulations to:

+ BH4IWK
+ F4HVO
+ K0CFI
+ KC9VGG
+ VE2FFS
+ WP4T

Visit https://www.amsat.org/amsat-50th-anniversary-awards-program/

To see all the awards visit http://www.amsat.org and click on Services then Awards.

[ANS thanks Bruce Paige, KK5DO, AMSAT Director Contests and Awards, for the above information]

AMSAT at Cowtown Hamfest - Ft. Worth - January 17-18

AMSAT will be represented at the 2020 Cowtown Hamfest in Fort Worth, TX on January 17 and 18 with a table, demos and presentations. If you live in the North Texas area, this is a great event, well attended and lots of vendors. Please put it on your calendar. Info posted at http://www.cowtownhamfest.com/

AMSAT Ambassador Tom Schuessler, N5HYP, says he has openings to staff the table, do the demos and assist with the presentations.

The Cowtown amateur Radio Club was a home for our dearly beloved and SK, Keith Pugh, W5IU. The organizers offered AMSAT a no charge table space in the market area so a big thank you to them is in order.

Tom hopes you can plan to be a part of this fine event. If you can assist in any way for AMSAT, please drop Tom an email at: N5HYP(a)arrl.net

Keep an eye on https://www.amsat.org/other-events/ for updates on coming AMSAT events.

[ANS thanks AMSAT Ambassador Tom Schuessler, N5HYP, for the above information]

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CAMSAT Says CAS-6 Activation for Amateur Use has been Delayed
01/07/2020 - via ARRL

Chinese Amateur Satellite Group (CAMSAT) CEO Alan Kung, BA1DU, tells ARRL that some problems with the precise attitude determination of the newly launched CAS-6 amateur radio satellite have delayed deployment of the antennas. The satellite was to have been put into service within 3 days.

“If the V/UHF antennas are deployed now, additional torque may affect determination of the satellite attitude,” Kung said. “Engineers need to modify and upload the software, which will take some time.” He said that taking into consideration the upcoming long Chinese New Year holiday, the test work is planned to be completed sometime in late February or early March. At that time, VHF/UHF antennas will be deployed, and the amateur radio payload will be available for use.

Kung points out that the satellite’s CW beacon has been turned on, although the antenna has not yet been deployed. “If you have a ‘big ear,’ you may be able to receive weak signal leaked from an undeployed antenna on 145.910 MHz,” he said. “A polyimide cover on the antenna chassis can help to leak some RF signal.”

CAS-6 launched successfully on December 20, piggybacked on a TIANQIN-1 technology test satellite. The microsatellite will be known as CAS-6/TIANQIN-1, and the call sign is BJ1SO. The primary launch payload was the China-Brazil Earth Resources Satellite, CBERS-4A.

CAS-6 is in a sun-synchronous orbit with an apogee of 390 miles. It carries a U/V linear transponder, with a downlink of 145.925, 20 kHz passband (inverted) and an uplink of 435.28 MHz. The CW telemetry beacon is on 145.910 MHz, while 4k9 baud GMSK telemetry will be transmitted on 145.890 MHz.

[ANS thanks CAMSAT and the ARRL for the above information]

Telemetry Dashboard Available for SMOG-P and ATL PocketQubes

The SMOG-P and ATL PocketQube team at the Budapest University of Technology and Economics has released additional information about their satellites recently launched by RocketLab from New Zealand.

SMOG-P digital downlink: 437.150 MHz
ATL   digital downlink: 437.175 MHz
More information on both satellites is posted at: http://gnd.bme.hu

SMOG-P (MO-105) is a 1p PocketQube (5x5x5 cm, 250 grams), a fully redundant tiny satellite with an actual scientific payload: a flying spectrum analyzer. It measures the scattered RF energy over the UHF band (specifically, in the digital terrestrial TV band) that can be detected in space.

ATL-1 (MO-106) is a larger 2p PocketQube featuring the same spectrum analyzer experiment.

Both satellites transmit almost identical telemetry data. In addition to basic CW telemetry carrying callsign, battery voltage and temperature, there is digital telemetry with variable data rate and coding scheme. Most frequently, modulation is 1250 or 5000 bps GMSK. The data is encoded either by the well-known "AO-40" FEC, or a shorter, proprietary variant of it, but they can also use a more powerful, state-

of-art repeat-accumulate (RA) coding scheme.

Some practical information about receiving the telemetry:

A GUI telemetry receiver is available for Windows and Linux (soon for OS X as well), and a command line receiver can also be used (Linux only). Both can be downloaded from: https://gnd.bme.hu:8080/index

The programs are able to submit the received packets to the central telemetry data base. This requires a quick registration, the login credentials can be used with either of the decoders. There are some issues with the GUI software that hopefully will be resolved within a few days. These decoders assume either a USB receiver connected through the sound card or an rtl-sdr receiver.

Thanks to Daniel Estevez, EA4GPZ, a high quality, full decoder and packet uploader is also available for GNU Radio 3.8 within the out-of-tree module gr-satellites. For uploading to the received packets, it uses the same login as the "official" programs do:
https://github.com/daniestevez/gr-satellites/tree/maint-3.8
This decoder can unleash the full potential of the RA FEC. You'll need to put an FM demodulator in front of the flowgraph.

The team is looking forward to seeing many submissions on the "Leader-board" from around the world: https://gnd.bme.hu:8080/leaderboard
Having many receiving stations around the globe could greatly improve the global picture the spectrum analyzer payload can offer.

[ANS thanks the PocketQube team at the Budapest University of Tech-nology and Economics for the above information]

MIT Radio Society W1MX January Lecture Series on “Everything Radio”

The Massachusetts Institute of Technology Radio Society (W1MX) and the Department of Electrical Engineering and Computer Science are hosting a lecture series in January that may answer some of your questions about such topics as radar techniques, interferometry, imaging, and radio astronomy, to antenna design and modern chip-scale RF devices. No prior experience with radio is necessary, and all are welcome.

All lectures will take place in the Green Building – MIT’s tallest academic building. Sessions will be live streamed and archived for later viewing. The lectures have already kicked off on January 10 with “The Next Generation of Weather Radar.” Other topics include “Lightning Interferometry” (January 13); “Radio Noises from the Sky” (January 15); “EDGES: Measuring the Early Universe” (January 22); “Antennas” (January 24), and “Chip-Scale THz Circuits and Sensors” (January 29). Lectures begin at 5 PM ET and conclude at 7 PM.

MIT has posted details at: http://w1mx.mit.edu/iap/2020/

[ANS thanks the Massachusetts Institute of Technology for the above information]

AMSAT-DL Announces a New QO-100 DownConverter V3d

The first version of the AMSAT-DL down converter was built in early 2019, enabling many stations to become active on QO-100 for the first time. Since then, a lot of operating experience and new insights have

been gained, which have flowed into the new board V3d.

The AMSAT-DL DownConverter V3d is a completely new development. It offers important functions for all QO-100 stations, no matter if you work with VHF/UHF, HF transceiver, or an SDR. This new board can be used as a central frequency converter assembly for your QO-100 station providing stable clocks for all components meaning that additional external GPS modules are not required.

The specification for the AMSAT-DL DownConverter V3d includes:

+ Centralized clock generation with GPS or OCXO
+ Reference clock for the PLL in the LNB
+ Reference clock for a transmit mixer
+ Reference clock for an SDR
+ Short-circuit proof LNB phantom power
+ Connection for a dual LNB (for simultaneous NB and WB reception)
+ Downward mixing of the NB transponder into an amateur band (UHF/VHF or HF)
+ OLED display for displaying the operating status and the station coordinates

The full specification and list of features is posted at:
https://amsat-dl.org/der-neue-amsat-dl-qo-100-downconverter-v3d
and you can order your unit at: https://shop.amsat-dl.org/

[ANS thanks AMSAT-DL for the above information]

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+ Sayama Mizutomi Community Center, Sayama, Japan, direct via 8J1SS
   The ISS callsign is presently scheduled to be NA1SS
   The scheduled astronaut is Luca Parmitano KF5KDP
   Contact is go: Mon 2020-01-13 11:58:07

[ANS thanks Charlie Sufana, AJ9N, and David Jordan, AA4KN, ARISS operation team members, for the above information]

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Big Bend National Park (DL88) March 16-17, 2020
Ron AD0DX, Doug N6UA, and Josh W3ARD will operate from Big Bend National Park to put grid DL88 on the air. Details will be added here, as they come available, but you are more than welcome to keep an eye on their individual Twitter feeds: https://twitter.com/ad0dx, https://twitter.com/dtabor, and https://twitter.com/W3ARDstroke5

Please submit any additions or corrections to ke4al (at) amsat.org

[ANS thanks Robert Bankston, KE4AL, AMSAT VP User Services for the above information]

Satellite Shorts From All Over

+ Need help getting your Icom IC-9700 working with SatPC32? Check out this guide written by Stefan Wagener, VE4SW posted on at: http://www.amsat.org --> Satellite Info --> Station and Operating Hints --> "The new Icom IC-9700 is a great satellite radio ..." document is at the bottom of the page. The direct URL to the PDF document is: https://tinyurl.com/ANS-012-IC9700-SatPC32

+ NASA's Texas Space Grant Consortium announced the summer program for STEM Educators (grades 5-12), LiftOff 2020: Moon to Mars, a weeklong professional development training for teachers, June 21-26, 2020. The application deadline is March 2, 2020. Workshops include learning experiences by incorporating a space science theme supported by NASA missions. Teacher participants are provided with information and experiences through speakers, hands-on activities and field investigations that promote space science and enrichment activities for themselves and others. Visit the program website at: http://www.tsgc.utexas.edu/liftoff/

+ A new distance record has been set on the PO-101 (Diwata2H) FM transponder. F4DXV worked R9LR on 08-Jan-2020 at 22:57 UTC for a distance of 4,542 km. More posted at: https://twitter.com/PRStoetzer/status/1215441267976523777 https://www.amsat.org/satellite-distance-records/

+ The AMSAT-DL radome to house their QO-100 antenna made it to Antarctica and is installed on top of Neumayer-Station III. Further work will be needed to be install it permanently. The station is also waiting for the AMSAT-UK FUNcube relay to arrive, pending weather conditions for flying there. See the photo posted by HB9HCF: https://twitter.com/pa3weg/status/1215642731336404995

+ A tweet from @AlbaOrbital reports that AMSAT Spain is signed up to fly on Alba Cluster 3. The Spanish satellite is a 1.5p PocketQube called Hades which is a satellite for amateur communications implementing a Bent-Pipe type repeater and with Store & Forward capabilities. See: https://twitter.com/AlbaOrbital/status/1214932730045194240

+ AMSAT-EA (Vocalía de Satellites de URE) has registered with IARU and the Spanish administration their GÉNESIS-L and GÉNESIS-N satellites for launch in mid-2020. An introduction to the project: https://www.ure.es/satelites-genesis-de-amsat-ea/ - and - https://twitter.com/ure_es/status/1214911584927133701
http://www.amsatuk.me.uk/iaru/finished_detail.php?serialnum=698
http://www.amsatuk.me.uk/iaru/finished_detail.php?serialnum=699

+ A 3-axis rotor based on the Celestron NexStar telescope mount with hamlib and rotctl drivers is demonstrated at: https://youtu.be/Avp1ROEkgeA -and- https://youtu.be/BDTjnJm41mc

+ Stuart Thomas, KB1HQS, author of the ARRL book, "Portable Operating for Amateur Radio", describes construction of a Hiking Pole Yagi Antenna for Extreme Environments" on his web page: https://kb1hqs.com/2019/12/26/ultralight-hiking-pole-yagi-antenna/

+ Amateur radio talks featured at the popular DEF CON 27 event in Las Vegas during August 8-11, 2019. Watch Mark KR6ZY - Hunting tape measure yagis and offset attenuators - DEF CON 27 Ham Radio Village: https://youtu.be/KGQDQZT9lRQ - and - feast on the videos of hundreds of additional DEF CON talks posted at: https://www.youtube.com/user/DEFCONConference/videos (via Southgate)

+ In April 2020, the NASA/ESA Hubble Space Telescope will celebrate 30 years since its launch. ESA/Hubble has produced a commemorative calendar of the telescope’s Hidden Gems that is now available for everyone to use and enjoy. See: https://www.spacetelescope.org/news/heic2001/

+ Opensource.com has published 12 open source resources for kids and young adults to learn from open source technology: https://opensource.com/article/19/12/kids-students-education

+ Did you ever dream of being a NASA astronaut? This spring, NASA once again will be accepting applications for New Astronauts! Stay tuned to http://nasa.gov/astronauts for upcoming information on how you can explore places like the Moon and Mars.

+ The Signal Path presents, "Tutorial on Theory, Characterization & Measurement Techniques of Phase Noise" in a video posted at: https://www.youtube.com/watch?v=SOHjFtw0sgo&feature=youtu.be

+ If phase noise doesn't keep you up at night you've probably found yourself wondering why do mirrors flip left & right but not up and down? A video giving you the answer that this has to do with specular reflection, mirrors being like windows into another world like alternate universes, just with in and out flipped! There's your answer! Have a good night after you watch at: https://youtu.be/1t4dOPxKgrY

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office.

Primary and secondary school students are eligible for membership at one-half the standard yearly rate. Post-secondary school students enrolled in at least half time status shall be eligible for the student rate for a maximum of 6 post-secondary years in this status. Contact Martha at the AMSAT Office for additional student membership information.

73 and remember to behave and to help keep amateur radio in space,
This week's ANS Editor,
JoAnne Maenpaa, K9JKM

k9jkm at amsat dot org